

STUDY SERIES
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**An Accessibility Evaluation
of the Census Calendar Application**

Lawrence Malakhoff

Statistical Research Division
U.S. Census Bureau
Washington, DC 20233

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Disclaimer: This report is released to inform interested parties of research and to encourage discussion. The views expressed are those of the author and not necessarily those of the U.S. Census Bureau.

**AN ACCESSIBILITY EVALUATION
OF THE CENSUS CALENDAR
APPLICATION**

Submitted to:

Rebecca Vilky,

U. S. Census Bureau

Marketing Services Office

Submitted by:

Lawrence Malakhoff,

U. S. Census Bureau,

Statistical Research Division

Washington, D.C.

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INTRODUCTION

Since June 2001, Federal regulations have required that U. S. government Web sites and other software developed by or for the U. S. Government provide comparable access to the information for all users¹. Computer users who have visual and or other disabilities are entitled to have the same access as users who do not currently have any disabilities

Accessibility is a subset of usability. Accessibility guidelines have several checkpoints that address more general usability, such as a logical tab order, dividing large information blocks into more manageable groups, and using the clearest and simplest language appropriate. Even if the application complies with the law, it still may not be usable, as the Census Bureau's Usability Lab has found in other testing. Both usability and accessibility testing need to be done to identify problems that actual users may have.

BACKGROUND

This accessibility evaluation was performed on the Census Calendar application. The Marketing Services Office (MSO) requested that the Statistical Research Division (SRD) use its expertise to verify and/or identify accessibility problems in the SRD accessibility lab. Members of the public and Census employees will use this application to get information on presentations, meetings, and exhibits and when and where the event occurs.

PURPOSE

The purpose of this evaluation is to report and rate the severity of accessibility problems to the developer of the software so that the problems can be fixed. The priority for accessibility problems is rated high, medium, or low. An item flagged as high means that the user could not perform the task at all. An item flagged as medium means that the user could perform the task, but with difficulty. An item flagged as low priority means that the user was not presented the same information as the able-bodied user, but could still perform the task.

SCOPE AND METHOD

This evaluation is primarily focused on testing accessibility for computer users with visual disabilities. Accessibility testing was performed using Insight/InFocus 4.2.2, which tests web applications². This product listed potential accessibility problems, which were then checked using the Job Access With Speech (JAWS) 8 screen reader software³. For the purpose of this report, an item is judged to be accessible (compliant with the regulations) if its screen text is read out loud, in a coherent order by the screen reader. Usability problems are detected by listening to the content vocalized by the screen reader and by visual inspection. These problems are included in this report as issues to evaluate in formal usability testing if resources are available.

¹ <http://www.section508.gov/index.cfm?FuseAction=Content&ID=3>

² <http://www.ssbtechnologies.com>

³ <http://www.freedomscientific.com>

FINDINGS

Findings are detailed in Figures 1-9, below. This application is not accessible for the following reasons:

- Skip links, used for bypassing navigation bars, are missing.
- The search data-entry field is not labeled.
- The Census logo and slogan image do not have alt text describing the image.
- There are programming errors in the extended list box on the Export Calendar Events screen: selection status is not available and position is always detected as “1 of 8”.
- Screen shots within Help are inaccessible because they do not have alt text describing them.

During the process of accessibility testing, these usability problems were detected:

- There are two tab stops for all the gray buttons and the blue month/year links.
- There is no way for the screen reader user to access the footnote text in two Help screens and the Export Calendar Events screen through the footnote symbol (“*”) and return to the topic.
- Insufficient space is allocated to the event name slot: “Conference” was abbreviated as “Conf”.
- On the main screen, it is not apparent “US Census Bureau” is a link because it is not blue or underlined.
- If a user is in the Help system when the calendar application refreshes, the user is put into the “Using the Calendar” topics area.
- On the main screen, if a user clicks on an event to see more details, the pop-up window does not appear on computers running Windows 2000.

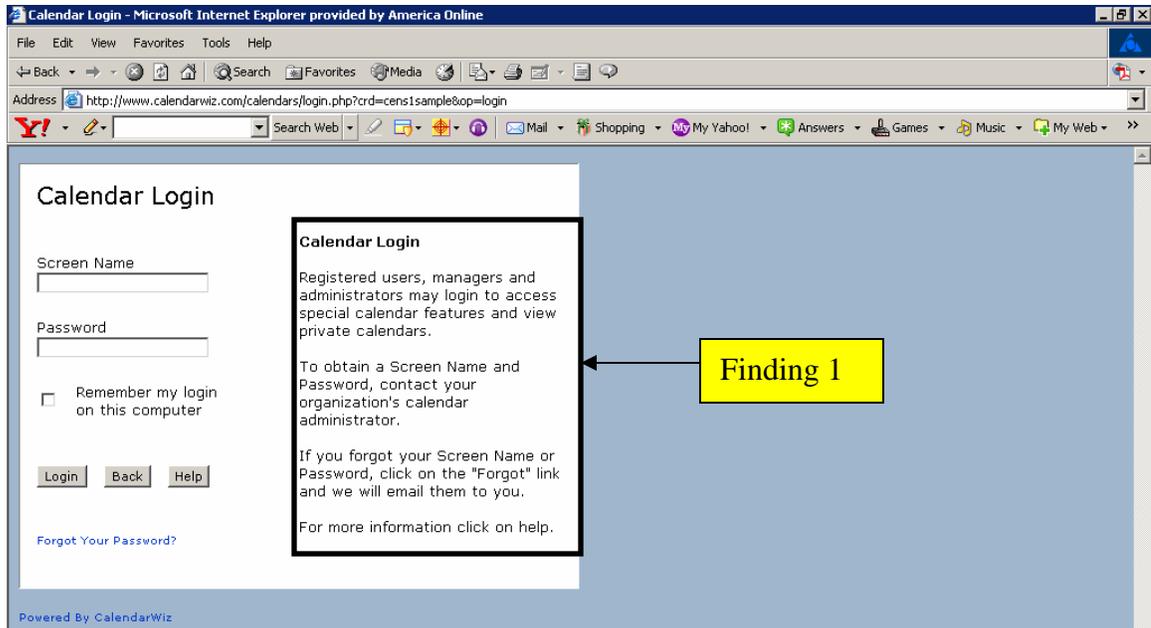


Figure 1. Screen reader users hear instructions after the data-entry fields.

Finding 1: Instructions are not available for the login data-entry fields. fields.
Priority: High

Details: Since instructions are placed after the data-entry fields, they are not accessible to screen reader users. This behavior violates 1194.22 paragraph N of the Section 508 regulation.

Recommendation: Either place the instructions before the first data-entry field or reprogram the tab order so the instructions are heard first.

How To: Use the development software to correct this deficiency.

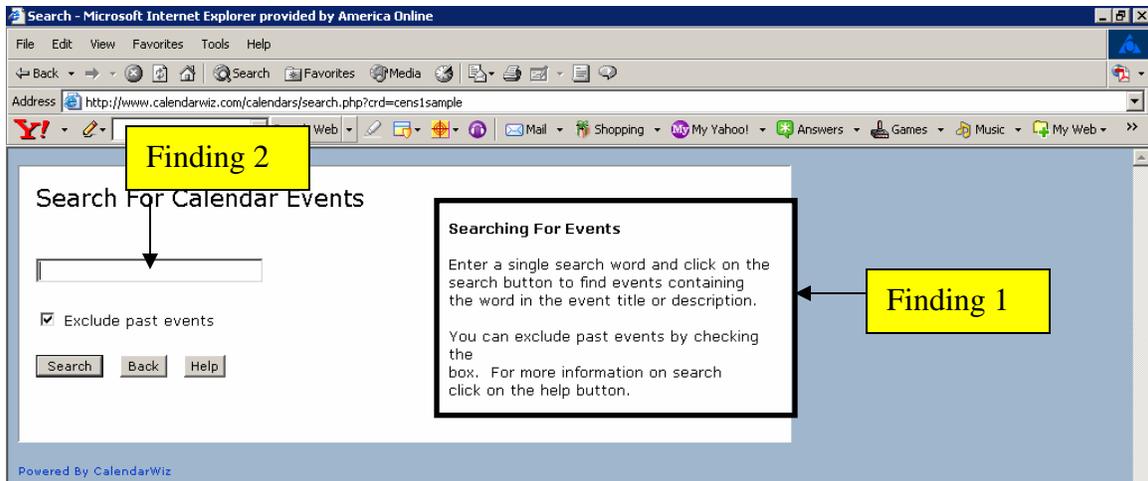


Figure 2. The search screen has two accessibility violations.

Finding 1 of Figure 1 applies to Figure 2.

Finding 2: The “Search” data-entry field is not labeled.

Priority: High

Details: The “Search” data-entry field does not have the label “Search” assigned to it. This behavior violates 1194.22 paragraph L of the Section 508 regulation

Recommendation: Assign the label “Search” to the data-entry field. This will ensure that the screen reader user will know how to proceed when encountering this field.

How To: Use the development software to make this change.

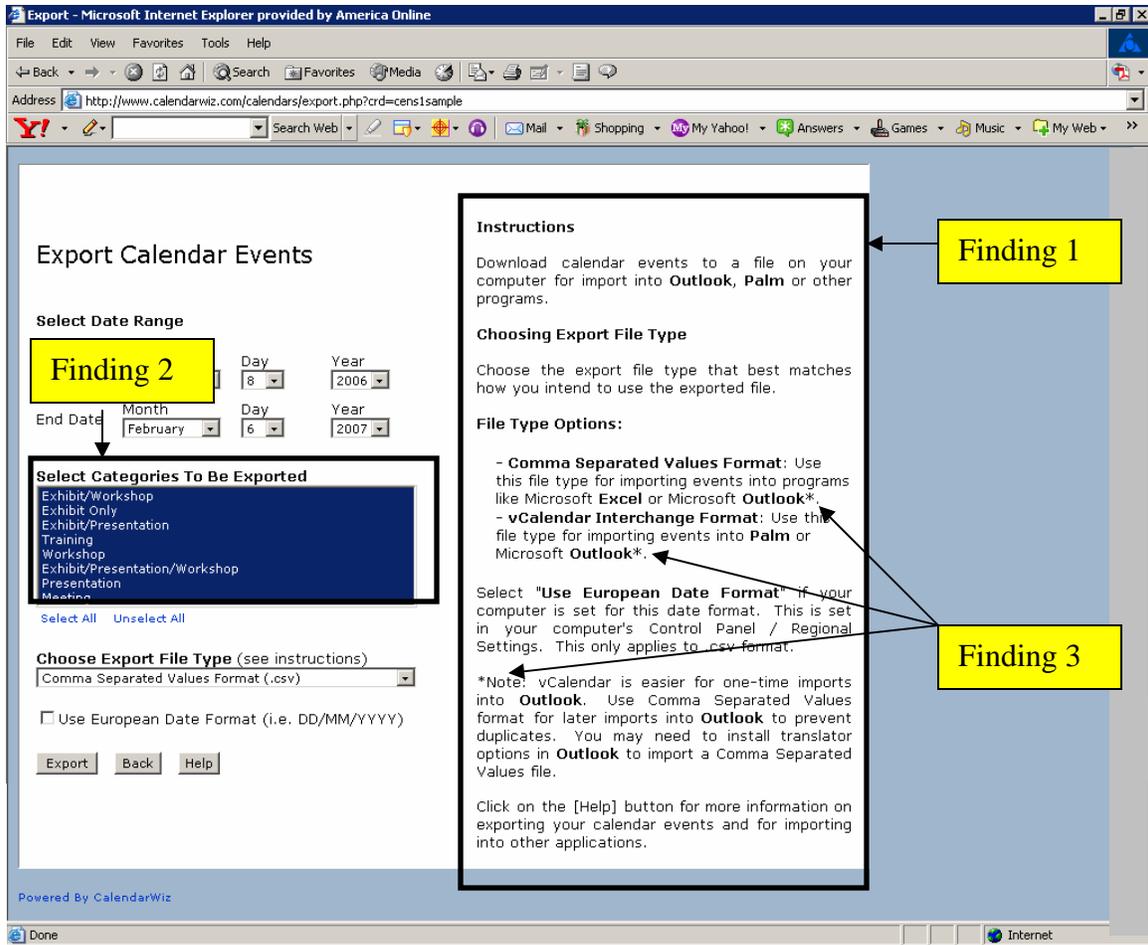


Figure 3. The export calendar events screen has two accessibility violations.

Finding 1 of Figure 1 applies to Figure 3.

Finding 2: Status of items in the extended list box is not accessible.

Priority: High

Details: There is a programming error in this extended list box. The extended list box does not reveal whether an item is selected or not. Position was always announced as “1 of 8”. There is no instruction to use the space bar to select an item. This behavior violates 1194.22 paragraph N of the Section 508 regulation

Recommendation: Instructions must be provided about selecting/deselecting items in the list. Item status must be announced when using the up/down arrows through the list.

How To: Use the development software to make this correction

Finding 3: The screen reader reads footnotes as regular text.

Priority: Medium

Details: A footnote is visible as an asterisk (*), but when the screen reader encounters it, “star” is announced with no indication that it is a footnote.

Recommendation: Make each footnote a graphical link to the footnote text.

How To: Make the asterisk a link. Use the LONGDESC feature to link to a separate web page containing the footnote text. When the screen reader user exits the LONGDESC screen, they should return to the instructions. See <http://www.wats.ca/resources/longdesc/31> for an example.

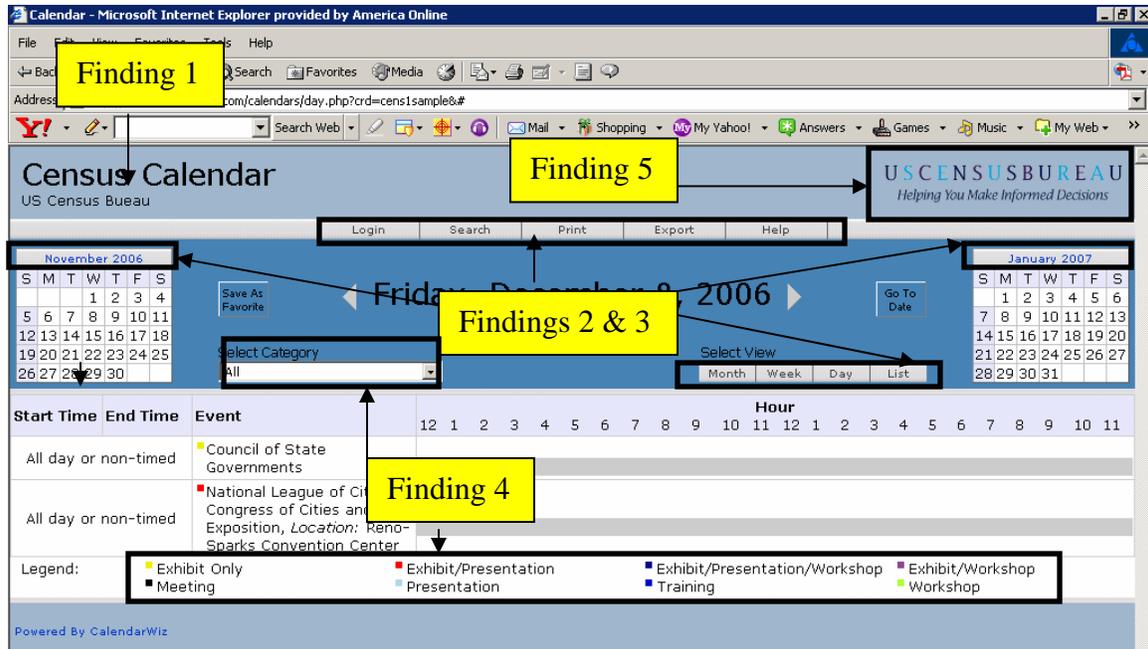


Figure 4. The “Day view” of the main calendar screen has two accessibility violations.

Finding 1: “Bureau” is misspelled.

Priority: Low

Details: This is not an accessibility problem, but is included in this report because screen reader users have difficulty understanding misspelled words.

Recommendation: The correct spelling is “Bureau”. Since this word is part of a link, the entire phrase, “US Census Bureau”, should be in underlined blue.

How To: Use the development software to make this correction.

Finding 2: There are two tab stops for each link noted in Figure 4.

Priority: Medium

Details: This is not an accessibility problem, but is included in this report because of the extra time screen reader users must spend listening to each link twice. The links within

the gray buttons and the blue links with current and previous months noted above in Figure 4 all have two tab stops.

Recommendation: The action of tabbing should cause the input focus to move from link to link. The screen reader user should not have to hear each link twice as is currently the case.

How To: Use the development software to make this correction.

Finding 3: Skip links are missing. (Global)

Priority: High

Details: The links noted above in Figure 4 were not programmed with a means to bypass them to access information about events. This behavior violates 1194.22 paragraph O Section 508 regulation.

Recommendation: Skip links allow a screen reader user to bypass unwanted content to quickly access content related to their current task. Web applications must have skip links to be compliant with Section 508. The skip link should precede the “login” link in tab order and skip to the first event in the calendar.

How To: Place a one-pixel transparent graphical link prior to the navigation bar and have it link to a screen element immediately following the last navigation bar element. The graphical link should have alt text providing users of screen readers the option to skip the navigation bar, such as “Press enter to skip horizontal navigation bar.”

Finding 4: Color is used by itself in the legend at the bottom of the screen to identify types of events in the Census calendar.

Priority: Medium

Details: Color is used to identify the type of event to be displayed on the Census calendar in the legend at the bottom of the screen. Legend colors would all be gray for users who cannot see in color. The capability to change the displayed events can be accomplished with the combo box noted above in Figure 4, so this is not a section 508 violation. This issue is included in this report because a user may not know that the current label, “Select Category”, implies that it can filter what is displayed on the calendar.

Recommendation: We recommend the label for the combo box be changed to “Show Event type”. Text next to the legend colors must be a different font, size, or shape than other text on the screen to assist users with color deficient vision

How To: The changes can be performed with the development software.

Finding 5: The Census logo image is not associated with alt text. (Global)

Priority: High

Details: Alt text is required for images, per 1194.22 paragraph A of the Section 508 regulation.

Recommendation: Alt text should describe what is in the image. We recommend “U.S. Census Bureau: Helping you make informed decisions.” for the logo.

How To: Use the software used to develop this application to make this correction.

Next, we have some findings from the help system.

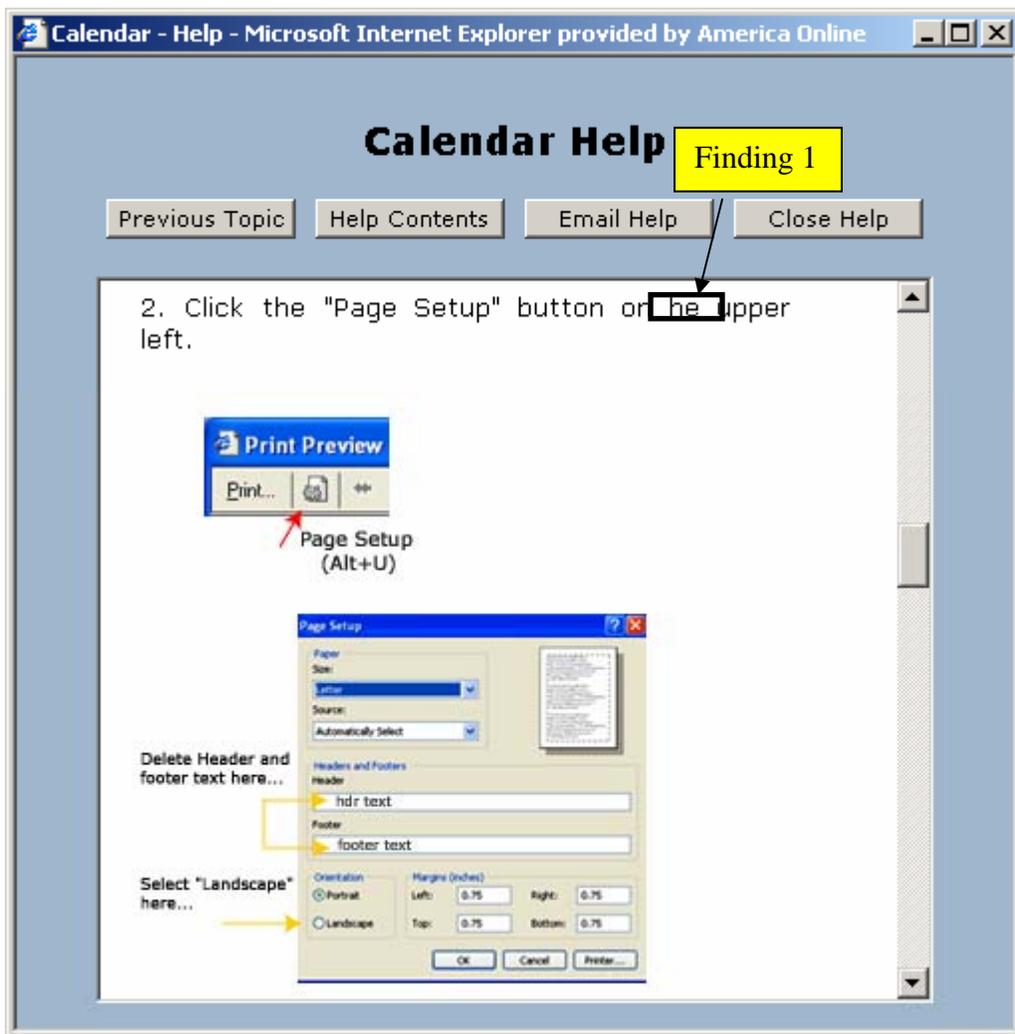


Figure 5. This help screen has a spelling error.

Recommendation: Replace “he” with “the”.

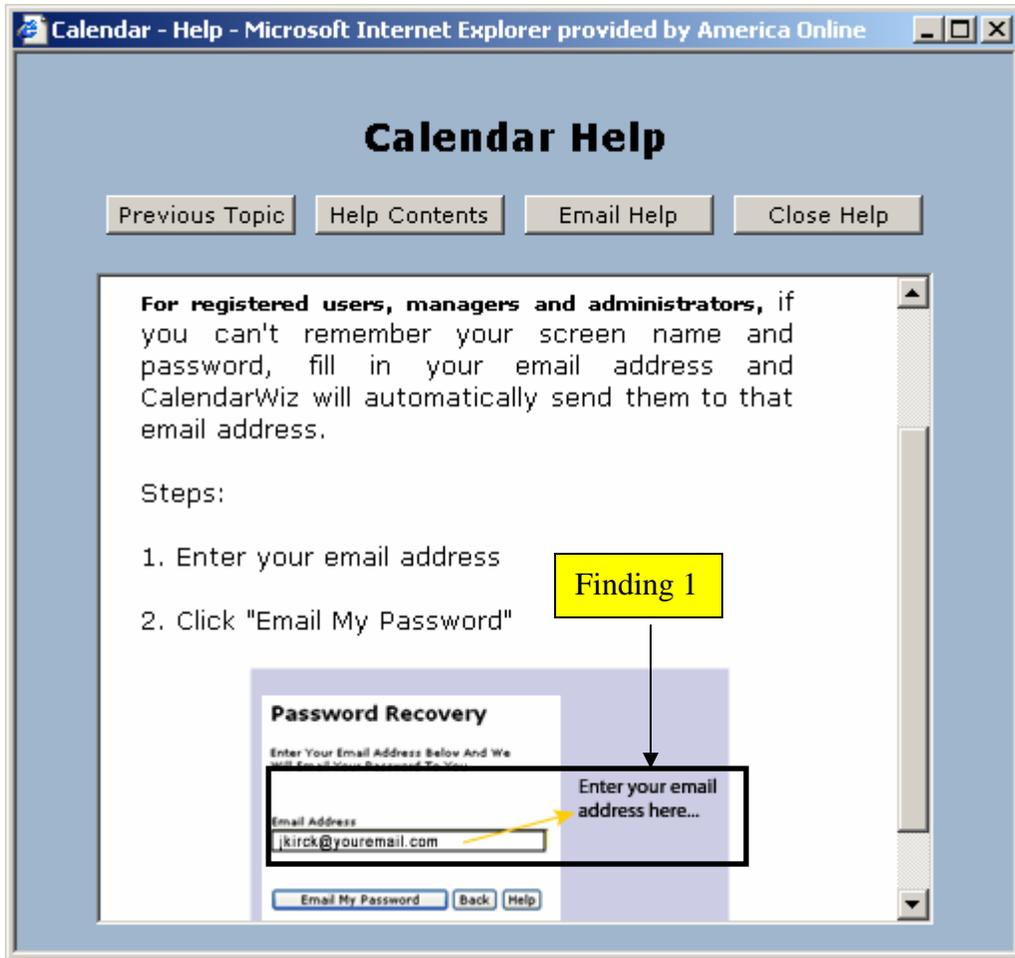


Figure 6. The arrow is pointing in the wrong direction.

Finding 1: Data should be typed into the area with the blue background, according to the direction of the yellow arrow.

Priority: High

Details: This is not an accessibility violation because instructions are compliant, but a person looking at the graphic may be uncertain on how to proceed, due to the direction of the yellow arrow. Some people will have trouble detecting the yellow arrow on a white background because the contrast is poor.

Recommendation: Change the direction of the yellow arrow so the tip is pointing into the email address data-entry field. Change the color of the yellow arrow to black.

How To: Use the development software to make these corrections.

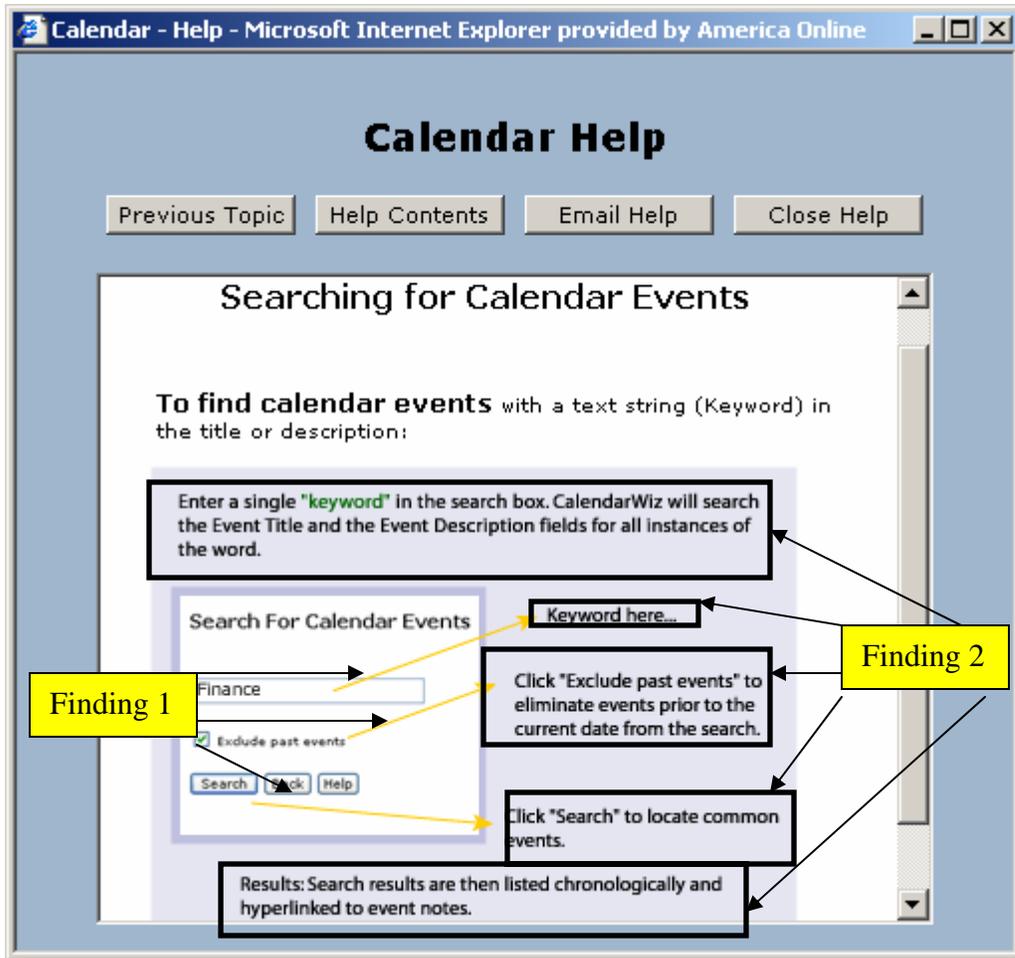


Figure 7. This help screen has inaccessible text and all the yellow arrows are pointing the wrong way.

Finding 1: Data should be typed into the area with the white background, according to the direction of the yellow arrow.

Priority: Medium

Details: The yellow arrows all point to inaccessible instructions (Finding 2). The arrows themselves do not need to be accessible, but the direction of the arrow may be confusing to persons who can see. Some people will have trouble detecting the yellow arrow on a white background because the contrast is poor

Recommendation: Change the direction of the yellow arrows so the tail begins at the text instruction and is pointing to the corresponding data-entry field or button. Change the color of the yellow arrow to black.

How To: Use the development software to make these corrections.

Finding 2: Instruction text is inaccessible.

Priority: High

Details: All instructions associated with the screen shot shown in Figure 7 are inaccessible. This behavior violates 1194.22 paragraph F of the Section 508 regulation.

Recommendation: Create plain text with the same wording used in Figure 7. This text should be positioned just below the screen shot.

How To: Use the development software to make this correction.

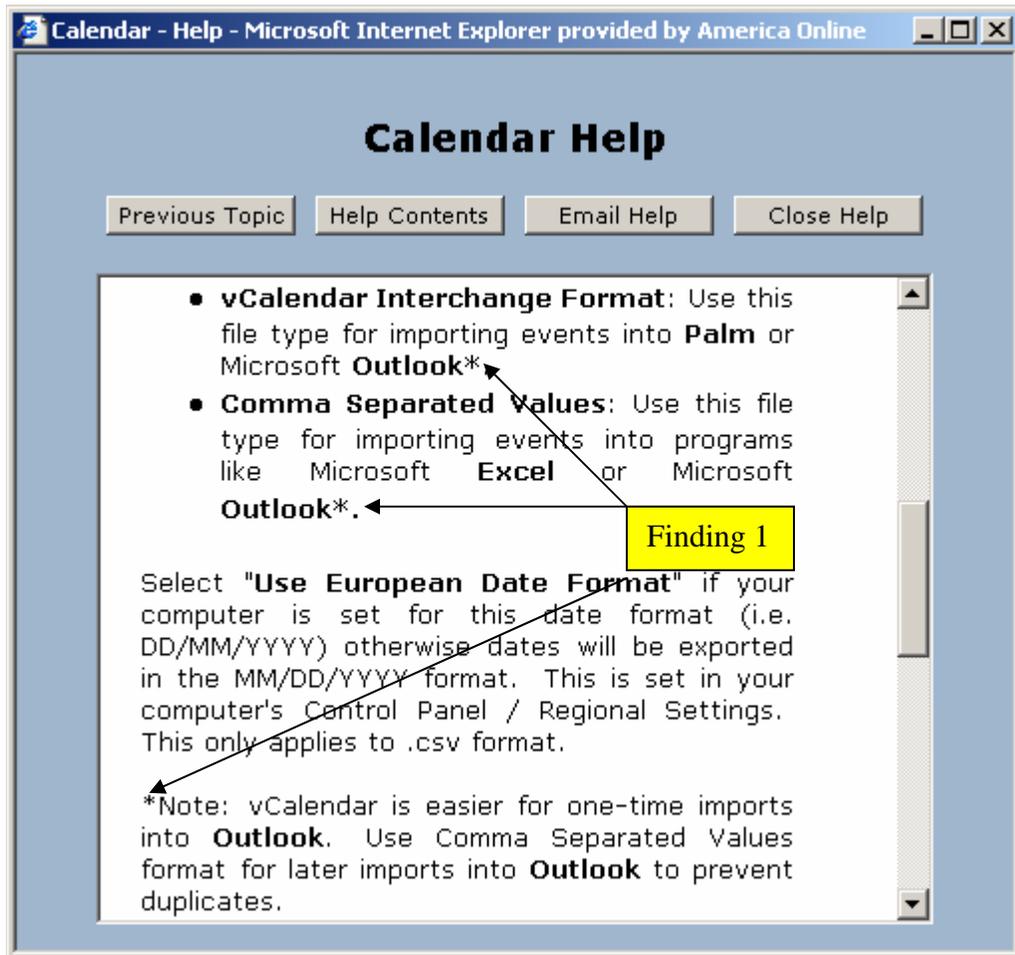


Figure 8. The asterisk (“*”) used to indicate the footnote provides no indication to screen reader users that the text following the asterisk is a footnote.

Finding 1: Footnotes are being read as regular text.

Priority: Medium

Details: An indicator for a footnote is visible as an asterisk (“*”), but when the screen reader encounters it, “star” is announced with no indication that it is a footnote.

Recommendation: Make each asterisk a graphical link to the footnote text.

How To: Make the “*” a link. Use the LONGDESC feature to link to a separate web page containing the footnote text. When the screen reader user exits the LONGDESC screen, they should return to the instructions. See <http://www.wats.ca/resources/longdesc/31> for an example.

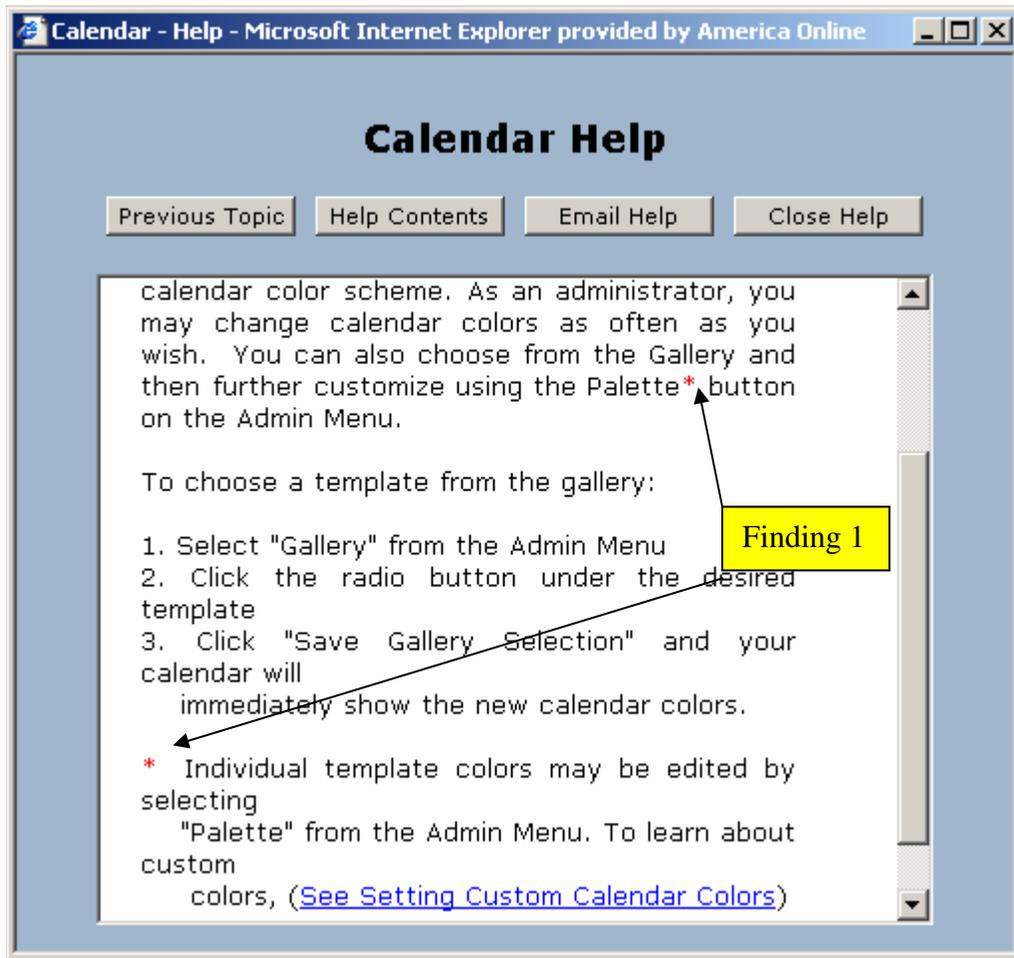


Figure 9. The red asterisk (*) used to indicate a footnote provides no information to the screen reader that the text following the asterisk is a footnote.

Finding 1: The red asterisk (“*”) used to indicate a footnote is read as regular text.

Priority: Medium

Details: A footnote indicator is visible as a red asterisk (“*”), but when the screen reader encounters it, “star” is announced with no indication that the text following it is a footnote.

Recommendation: Since this footnote is only referenced once, the footnote text could be merged into the instructions.

How To: Use the development software to make this correction.

Summary

The Census calendar application has several areas where accessibility needs to be addressed. Skip links, used for bypassing navigation bars, need to be programmed into the software so screen reader users can bypass the previous and next month mini-calendars and the gray buttons and the cursor focus can be placed on the first event. The Census logo and slogan image do not have alt text describing the images. There are programming errors in the extended list box on the Export Calendar Events screen: Selection status is not available and position is always detected as “1 of 8”. The search data-entry field is not labeled.

The help system also has accessibility issues needing remediation. The footnote symbol (“*”) was created as text, instead of a link, requiring the screen reader user to perform extra navigation to read the content in the proper order. Some screen shots within Help are inaccessible.

During the process of accessibility testing, some usability problems were detected. If a user clicks on an event to see more details, this pop-up window does not appear on computers running Windows 2000. There are two tab stops for all the gray buttons and the blue month/year links. Insufficient space is allocated to the event name slot: “Conference” is abbreviated as “Conf”. It is not apparent that “US Census Bureau” is a link because it is not blue or underlined. If a user is in the Help system when the calendar application refreshes, the user is put into the “Using the Calendar” topics area.

Although the Census Bureau upgraded all the employee computers to Windows XP, members of the public may still be using machines with Windows 2000 and not be able to view more details about an event. If accessibility and usability recommendations are followed for the Calendar application, event look-up could be carried out more efficiently and quickly and with greater satisfaction by all system users.